G
963
M52
3

JUN 11 1931

STATISTICAL BULLETIN
Metropolitan Life Insurance Co.

VOL. XII. MAY, 1931 No. 5

CONTRASTING TRENDS IN DIABETES MORTALITY

Although the mortality from diabetes has been rising in recent years, there is a total lack of uniformity in the changes of the deathrates when analyzed by sex, age and color. As we have already pointed out in the April STATISTICAL BULLETIN, there has been a substantial improvement in the mortality among young persons. At the older ages, on the other hand, there has been so large an increase as to outweigh the fall in the deathrate among younger persons. The greater part of this rise is due to the broad upswing of the mortality among older women. This feature of the situation is even more striking among colored persons than among whites; for the deathrate among colored women has gone up faster than in any other group and was even higher in 1930 than that of white females.

The trend of the diabetes deathrate among males has been somewhat different from that among females, particularly in respect to the rates of change according to age. Among white persons, both male and female, the trend of the mortality at ages under 45 was gradually upward during the years preceding the discovery of insulin. But since 1922, the year in which the use of insulin began, the deathrate at every age period under 45 has declined sharply from the pre-insulin level. Among white males, the deathrate at all ages under 45 has dropped from 5.2 per 100,000 in the period 1911-1922 to 3.4 in the years 1923-1930, or about one-third. Among white females, the fall in the rate between these two periods was smaller—from 4.5 to 3.5, or slightly less than one-fourth. In each sex, the decline has been a fairly steady one, the minimum rates occurring toward the end of the period.

After age 45, the trends of the deathrate for each sex show greater

disparity. Among males 45 to 64 years old, there has been little change in the deathrate from year to year in the insulin period, 1923-1930. Among females, however, the deathrate has been stable only at ages 45-54, and at ages 55-64, there has been a fairly steady rise. In old age, the mortality from diabetes in each sex has increased in marked degree. Among men, ages 65 to 74, the deathrate in the insulin period was 25 per cent. higher than the level of 1911-1922 and, in the last four years, it has averaged over a third higher. The upward trend among females in this age group has been even steeper; the average deathrate at ages 65-74 in the insulin period has been 40 per cent. above the level in the twelve years preceding, and in the four-year period, 1927-1930, 50 per cent. higher.

Among negroes, there has been no improvement whatsoever in diabetes mortality. Among males under 45, the deathrate has remained unchanged in the two periods, 1923-1930 and 1911-1922. Colored women in this age group show a large increase. The deathrate of the period, 1923-1930, 6.0 per 100,000, was 60 per cent. in excess of the average rate of 3.7 of the pre-insulin years. The most marked change, however, as in the case of white persons, is at ages over 45. Among colored males, the deathrate in 1923-1930 was 20 per cent. higher than in the preceding twelve years; among females, more than 75 per cent. higher.

These differences in the rate of change of the diabetic deathrate, between the various color, sex and age groups, have resulted in extremely interesting changes in the relative mortality of males as compared with females, and of white persons as compared with colored. Among white persons, at ages under 45, the mortality of males was formerly 15 per cent. in excess of that of females, but in the insulin period, the male rate is slightly the lower of the two. At ages 45-74, the excess of the female deathrate over that of males has risen from 70 per cent. in 1911-1922 to 90 per cent. in 1923-1930. The increase differs with age: at ages 45-54, the excess of the female deathrate has gone from 40 per cent. to 70 per cent., at 55-64, from under 90 per cent. to nearly 100 per cent., and at ages 65-74, from 70 per cent. to 90 per cent.

Among colored persons, similar changes have occurred. At ages under 45, the female deathrate from diabetes in the pre-insulin years was only slightly more than the male, but in the last eight

years it has been two-thirds higher. At the older ages, 45-74, the female rate in the insulin period has averaged nearly double that of males, although in the pre-insulin years it was only one-third greater.

When we compare the white and colored races, we also find interesting changes in the ratios of diabetes mortality. White males under 45, formerly had a deathrate 50 per cent. higher than colored males of the same ages, but since 1922 the mortality of the former has been somewhat the lower of the two. At ages 45-74, the change in the ratio of mortality between white and colored males is smaller, the excess of the white dropping from 35 per cent. in 1911-1922 to 25 per cent. in the insulin period. Among females, changes similar in kind but even greater in degree have taken place. The death-rates of both white and colored women have gone up rapidly, but the rise among colored women has been much the greater. Consequently, at ages under 45, the mortality of colored females in the insulin period has been 70 per cent. in excess of that for white females, although in the pre-insulin years it was 20 per cent. below the white rate; and after 45 years of age, their mortality from diabetes, which in 1911-1922 was little more than half the white rate, in recent years has averaged only one-fifth less than that of white women.

SMALLPOX IN THE UNITED STATES AND CANADA, 1930

Analysis of the reports received from forty-four states, the District of Columbia and six Canadian provinces shows that there was a marked increase in the incidence of smallpox in the United States, in 1930, but a decided decrease in the prevalence of this disease in Canada. There was recorded, in each country, a rise in the case-fatality rate. Fortunately, however, the areas in which increases occurred were those in which there was a relatively low incidence of the disease.

The appended tables show the number of cases, deaths and the case-fatality rates in a group of American states and Canadian provinces, in selected individual states and provinces, in 703 cities considered as a group, and in certain selected cities.

Among the cities listed in the table on page 6 many had enormous smallpox sickness rates in 1930. In Waterloo, Iowa, and Cleburne, Texas, there were 1,145 and 1,109 cases, respectively, per 100,000 population. Other very high rates prevailed in Davenport, Iowa (1,060); Ottumwa, Iowa (677); Sioux Falls, South Dakota (594);

Aberdeen, Washington (566); Spokane, Washington (543); Muncie, Indiana (490); Phoenix, Arizona (453); New Philadelphia, Ohio (453). Rates between 300 and 400 were recorded for Quincy, Illinois; Des Moines, Iowa, and Lima, Ohio.

The rise in the prevalence of smallpox in the United States from 38,281 cases, in 1929, to 44,544 cases, in 1930, indicates a serious situation. But, disturbing as these figures are, their full significance is revealed only when we realize that over 43,000 (97 per cent.) of the 1930 cases occurred in states whose population aggregated but 54 per cent. of the total population of the country. These states, in large part, are those in which anti-vaccination propaganda has been most active. In two states, Indiana and Ohio, there were reported over 5,000 cases each. California, Illinois and Iowa each reported over 3,000, and Kansas, Michigan, Oklahoma and Washington each had over 2,000 cases.

These figures may be compared with those reported by New England and the Middle Atlantic States, areas in which public support of the constituted health authorities for vaccination has been most responsive. Here, in the country's most thickly populated region, a condition conducive to active propagation of the disease, it is found that, among a population of approximately 37,000,000, there occurred only 479 cases and two deaths from smallpox, in 1930. To appreciate the full significance of these figures, one has but to realize that, if conditions in this area had been the same as those existing in Indiana, for example, there would have occurred

Smallpox Cases, Deaths and Case-Fatality Rates. Years 1928-1930 for Forty-four States, District of Columbia, and Six Canadian Provinces.

Area	1930			1929			1928		
	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths per 100 Cases
United States and Canada	44,734	145	.32	39,088	113	.29	37,314	127	.34
United States (44 States and Dist. of Columbia)	44,544	144	.32	38,281	110	.29	35,485	123	.35
Canada (6 Provinces)	190	1	.53	807	3	.37	1,829	4	.22

60,526 cases instead of a mere 479. Or, to put the matter in another light, if the twenty-nine states with higher prevalence had been as active in their efforts to control the disease as were those of the North Atlantic Seaboard, there would have occurred only 860 cases instead of 43,361.

This condition is clearly indicative of the efficacy of vaccination as a preventive of smallpox. There must be no relaxation of the vigor which public health officials have displayed in their fight against the anti-vaccination movement. Where vaccination and revaccination are neglected, smallpox flourishes; in communities that are well protected, cases and deaths are rare, indeed.

Selected States and Canadian Provinces Showing a High Case-Fatality Rate or Above-Average Prevalence of Smallpox During the Year 1930.

Area	Cases	Deaths	Deaths per 100 Cases
United States			
Alabama	187	1	.53
Arkansas	401	6	1.50
Arizona	547	0	0
California	3,139	7	.22
Idaho	423	1	.24
Illinois	3,784	6	.16
Indiana	5,313	18	.34
Iowa	3,044	5	.16
Kansas	2,422	6	.25
Kentucky	1,904	16	.84
Michigan	2,375	9	.38
Mississippi	312	2	.64
Montana	379	1	.26
Nebraska	1,934	8	.41
Nevada	123	0	0
North Carolina	556	5	.90
North Dakota	745	0	0
Ohio	5,116	13	.25
Oklahoma	2,560	17	.66
Oregon	752	2	.27
South Carolina	82	1	1.22
South Dakota	1,797	1	.06
Tennessee	536	3	.56
Vermont	103	2	1.94
Virginia	263	1	.38
Washington	2,378	8	.34
West Virginia	957	1	.10
Wisconsin	956	4	.42
Wyoming	273	0	0
Canada			
Quebec	40	1	2.50

Smallpox Cases and Deaths in New England, the Middle Atlantic States and the District of Columbia. 1930.

State	Cases	Deaths	Deaths per 100 Cases
Maine	0	0	0
New Hampshire	0	0	0
Vermont	103	2	1.94
Massachusetts	2	0	0
Rhode Island	0	0	0
Connecticut	0	0	0
New York	332	0	0
New Jersey	1	0	0
Delaware	0	0	0
Maryland	0	0	0
Pennsylvania	41	0	0
District of Columbia	0	0	0

Smallpox Cases, Deaths and Case-Fatality Rates for the Years 1928-1930. For 622 United States Cities and 81 Canadian Cities.

Area	1930			1929			1928		
	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths per 100 Cases
United States and Canadian Cities (703)	10,001	20	.20	11,840	30	.25	10,864	18	.17
United States Cities (622)	9,554	20	.21	11,071	29	.26	9,688	17	.18
Canadian Cities (81)	447	0	0	769	1	.13	1,176	1	.09

Number of Smallpox Cases and Deaths in Certain Cities, 1930.

City	Cases	City	Cases
Canada		Grand Rapids, Mich.	16
Ottawa, Ont.	205	Akron, Ohio	392
Regina, Sask.	103	Canton, Ohio	83
		Cleveland, Ohio	19
United States		Lima, Ohio	166
Phoenix, Ariz.	218	Mansfield, Ohio	57
Sacramento, Calif.	124	New Philadelphia, Ohio	56
Quincy, Ill.	130	Toledo, Ohio	193
Rockford, Ill.	179	Oklahoma City, Okla.	460
Evansville, Ind.	95	Portland, Ore.	255
Fort Wayne, Ind.	240	Sioux Falls, S. Dak.	198
Indianapolis, Ind.	153	Cleburne, Texas	128
Muncie, Ind.	228	Houston, Texas	162
Davenport, Iowa	644	Barre, Vt.	11
Des Moines, Iowa	492	Aberdeen, Wash.	123
Ottumwa, Iowa	190	Seattle, Wash.	117
Waterloo, Iowa	529	Spokane, Wash.	627
El Dorado, Kan.	13	Tacoma, Wash.	181
Kansas City, Kan.	174	Madison, Wis.	16

THE FORTHCOMING LONDON MEETING ON POPULATION PROBLEMS

Modern industrial civilization, with its high speed machinery, and its facilities for rapid transportation of foodstuffs and commodities over great distances, has much increased the capacity of the land to support human life. At the same time modern medical and sanitary science have greatly reduced death rates. Accordingly, the past century has seen a rapid increase in the population of all civilized countries simultaneously with a rising standard of living. This has led, on the one hand, to favorable conditions for all who directly or indirectly gain from the high rate of industrial production associated with an expanding market; on the other hand, it has created problems of population pressure which probably have not yet been felt in their full intensity.

It is clear that the rapid expansion of population so characteristic of the last century cannot go on indefinitely. For the United States, the turning point has probably been reached and we must expect that from now on the annual increment will be much less than heretofore. This, though in a sense the solution of the problem of growing population pressure, is in itself also the occasion for a new set of problems. For, expanding markets obviously are favorable to the general business situation, and when the rate of population expansion slackens, the fact is very likely to make itself felt in all lines of business. The decreasing rate of population growth will also bring with it changes in the age distribution of the nation, and this will have a reaction both on production and on consumption of goods demanded by persons of different ages.

One aspect of the population problem on which rather widely divergent opinions have been held in the past is the problem of food supply. Beginning with Malthus, there has been a group of alarmists who have feared that the growth of human population would shortly outrun the capabilities of the soil to produce a sufficient crop to feed the multitude. Until fairly recently, the voices of this group of students have dominated the discussion. But latterly, opinion has been swinging in the opposite direction. R. A. FISHER, in England, and O. E. BAKER, here in the United States, have spoken rather in terms of over-production of agricultural products, and have tended to advise retrenchment, rather than expansion of cultivated land. The last word on this subject has not yet been spoken, but the facts brought to light by Dr. Baker's expert investigations certainly

strongly bear out the attitude which he represents in the policy of regulation of agricultural production.

Problems of a different order are those related to the more immediately biological aspect of population growth. The slackening of the rate of growth of our population, and of the population of all civilized countries, is the expression of a greatly lowered birthrate. Here both economic and biological problems arise and they are of two kinds: problems of *cause*, and problems of *effect*. As to the *cause* of the declining birthrate, the motive is undoubtedly economic. The motive being given, the means seem to be readily and increasingly available for those who seek them. All indications are that the marked fall in the birthrate in recent years is largely due to this cause. It is possible, however, that there is also a slight decline in the physiological fertility of our population. As to the *effect* of the declining birthrate, the main problem here is how much farther this decline will go. We are at a very critical stage in the history of the civilized races. We have almost reached the point where fertility and mortality are balanced. Much further improvement of mortality cannot henceforth be expected. If, then, the birthrate continues to decline without let-up, we shall be faced with a serious situation, namely, an annual deficit in the balance of births and deaths for the nation as a whole.

These, and other related problems, are the field for the study of which the INTERNATIONAL UNION FOR THE SCIENTIFIC INVESTIGATION OF POPULATION PROBLEMS was formed at the WORLD POPULATION CONGRESS in 1927. The Second General Assembly of the Union meets in London early in June of this year, and a large delegation of the American National Committee, with Dr. LOUIS I. DUBLIN as Chairman and Dr. ALFRED J. LOTKA as Secretary-Treasurer, will attend.

The assembly meets in part for the transaction of the business incidental to conducting the organization and in part for the reading of papers and discussion of the population problem, the international importance of which cannot be rated too high.

HEALTH RECORD FOR APRIL, 1931

Despite a bad beginning, due to widespread prevalence of influenza, 1931 is developing into a good health year. At the end of April, the cumulative mortality rate was only 3.4 per cent. above the figure for the like period of 1930, which was the record health year of all time. The deathrate for this month was not only lower than

in 1930, but, with two exceptions (in 1927 and 1922), it was the lowest April figure ever recorded for Metropolitan Industrial policyholders. The mortality for this month, in 1921, was identical with that for 1931.

Among approximately one and one-quarter millions of Canadian Industrial policyholders, the year-to-date deathrate was over 8 per cent. below the figure registered last year; while among the insured residing in the Far Western States, the improvement this year was 5 per cent. In the rest of the United States, however, where 87 per cent. of the Industrial policyholders live, the mortality rate for the January-April period rose 4.8 per cent., as compared with last year.

Among the favorable health developments of 1931, to date, the two outstanding items relate to tuberculosis and diphtheria. For the former, a decline of 4.9 per cent. has been recorded, despite the widespread prevalence of influenza, which always tends to increase the mortality from tuberculosis. The tuberculosis deathrate for the month of April showed an improvement of more than 12 per cent., as compared with the same month a year ago. It is probable that the decline in the tuberculosis deathrate in 1931 will be well above the average year-to-year decrease which has been observed for about a decade. For diphtheria, the outlook is that the largest decline ever experienced will be witnessed this year. At any rate, for the first four months, the drop has amounted to 39 per cent., as compared with the corresponding period of 1930.

The deathrate for diseases incidental to pregnancy and childbirth is running lower than ever before, and declines, as compared with last year, are also in evidence for typhoid fever, whooping cough, diarrheal complaints, homicides and accidents.

There are, nevertheless, a few decidedly unfavorable items in the health record of the year, apart from the considerable increase in the mortality from influenza-pneumonia. The most serious development relates to cancer. While the deathrate for this disease has been steadily increasing for years, no marked rise has been recorded heretofore between any one year and its successor—such as will obtain this year, if the increase of 9.1 per cent., recorded during the first four months, persists throughout the year. Such data as are available for the general population, for the early months of 1931, also point strongly to an unusually large increase in mortality from cancer.

The situation with respect to diabetes is also distinctly unfavorable, with a much larger increase thus far in 1931 than has been shown for recent years. The influenza outbreak has doubtless been responsible for a part of this increase and has also been a factor in

bringing about higher deathrates for the principal "degenerative" conditions.

The suicide deathrate has increased slightly and the homicide rate shows a small decline. Automobile fatalities have been more frequent than during the corresponding period of any preceding year.

The deathrate in the general population in the large cities of the United States, in April, was 12.9 per 1,000 estimated population, as compared with 13.7 in March and 14.1 in April, 1930. Measles, smallpox and typhoid fever were more prevalent in April than in March, but there was less sickness from diphtheria, influenza, poliomyelitis and scarlet fever. Comparison with April, 1930, shows more sickness, in 1931, from influenza, measles, poliomyelitis and scarlet fever, along with fewer cases of diphtheria, smallpox and typhoid fever. These statements are based on the number of cases reported during the first four weeks in March and April, 1931, and April, 1930.

Diphtheria cases declined from 3,933 in March to 3,359 in April, according to reports received from thirty-five states. Measles cases, however, rose, in thirty-eight states, from 66,437 in March to 77,761 in April. The more noteworthy increases were those in Pennsylvania, Indiana, Wisconsin, North Carolina and Maryland. Scarlet fever cases, in forty-six states, dropped from 23,932 in March to 21,997 in April.

There was less than half as much sickness from influenza in April as in March, with the outstanding decreases in Ohio, South Carolina, Georgia and California.

There was a slight increase from smallpox, in forty-five states, with 4,034 cases in April, as compared with 3,703 in March. In Oklahoma, Mississippi and Illinois, the increases were more pronounced than elsewhere in the country.

Among the more noteworthy health activities of the month, the following may be mentioned: The Kansas Legislature has appropriated $25,000 for the free distribution of diphtheria antitoxin and smallpox and typhoid vaccines. The American Society for the Control of Cancer recently announced a plan of field service in which the country has been tentatively divided into districts, with three new field representatives to cover these territories. It is reported that a Child Guidance Clinic will be opened, in May, in Grand Rapids, Michigan. The clinic has been financed through a grant from the CHILDREN'S FUND OF MICHIGAN, cooperating with local agencies.

The following table shows the mortality among Industrial policyholders for April, 1931; March, 1931, and April, 1930, together with the cumulative rate for the first four months of each year.

METROPOLITAN LIFE INSURANCE COMPANY

Deathrates* per 100,000 for Principal Causes, Premium-Paying Business in Industrial Department (Annual Basis)

MONTHS OF APRIL, 1931; MARCH, 1931, AND OF APRIL, 1930

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED*				
	Apr. 1931	Mar. 1931	Apr. 1930	Cumulative Jan.-Apr. 1931	Cumulative Jan.-Apr. 1930
TOTAL—ALL CAUSES	975.1	1016.4	991.1	1004.3	971.3
Typhoid fever	.9	.9	1.1	1.1	1.2
Measles	5.9	5.5	6.6	4.3	4.0
Scarlet fever	4.2	4.3	4.1	4.1	3.9
Whooping cough	2.8	3.8	4.5	3.8	4.8
Diphtheria	3.0	4.9	6.3	5.1	8.4
Influenza	33.0	52.2	20.1	44.0	25.9
Tuberculosis (All forms)	80.5	87.1	91.9	82.3	86.5
Tuberculosis of resp'y system	70.0	79.1	78.7	73.2	75.2
Cancer	82.8	83.6	79.8	83.9	76.9
Diabetes mellitus	22.9	23.8	19.9	24.1	20.9
Cerebral hemorrhage	68.8	64.5	66.5	68.0	64.6
Organic diseases of heart	168.4	170.3	166.9	171.6	166.1
Pneumonia (All forms)	111.0	126.0	120.7	125.9	117.2
Other respiratory diseases	13.3	13.2	13.7	13.9	13.5
Diarrhea and enteritis	9.4	9.5	11.9	10.1	11.7
Bright's disease (Chronic nephritis)	73.7	73.6	77.6	74.5	73.3
Puerperal state	13.3	12.3	11.0	12.2	13.1
Suicides	11.2	9.5	10.5	9.6	9.4
Homicides	6.0	6.9	5.8	6.4	6.7
Other external causes (excluding suicides and homicides)	53.4	47.0	53.2	52.7	56.6
Traumatism by automobiles	18.5	16.3	18.2	18.3	17.6
All other causes	210.7	217.3	219.0	206.7	206.7

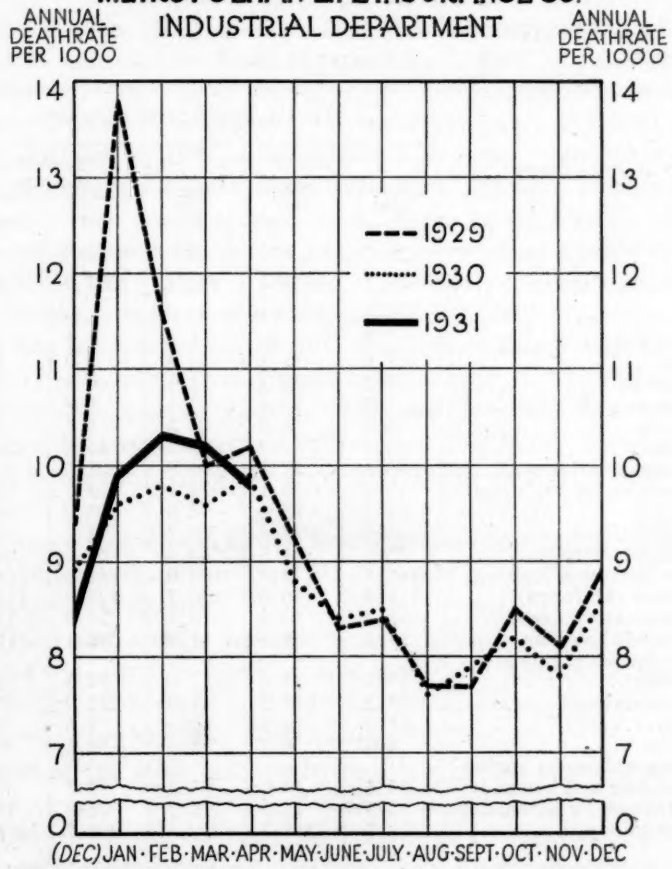
*All figures in this table include insured infants under one year of age. The rates for 1931 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

Correspondence on the subjects discussed in these BULLETINS may be addressed to: The Editor,

STATISTICAL BULLETIN,
Metropolitan Life Insurance Company,
1 Madison Avenue, New York City

DEATHRATES
FROM ALL CAUSES

METROPOLITAN LIFE INSURANCE CO.
INDUSTRIAL DEPARTMENT



1929*	13.8	11.6	10.0	10.2	9.2	8.3	8.4	7.7	7.7	8.5	8.1	8.9
1930*	9.6	9.8	9.6	9.9	8.8	8.4	8.5	7.6	7.9	8.2	7.8	8.6
1931	9.9	10.3	10.2	9.8								

*Rates for 1929 and 1930 are final.

METROPOLITAN LIFE INSURANCE COMPANY PRESS
NEW YORK, U.S.A.
78024